(No Model.) 3 Sheets—Sheet 1.

G. E. CLARKE.

LETTER PRESS.

No. 505,093. Patented Sept. 19, 1893.

Fig. 1.

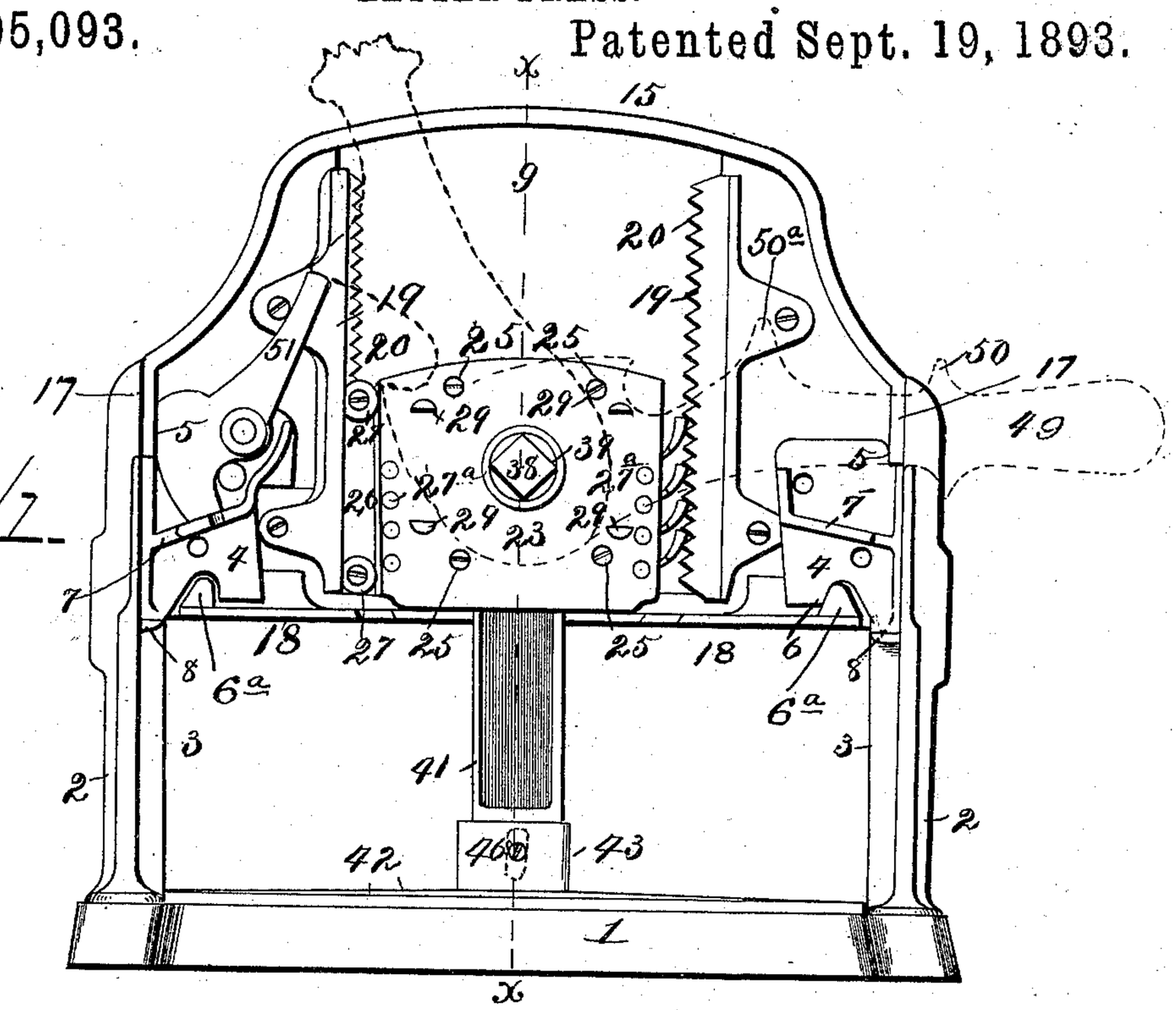

Fig. 2.

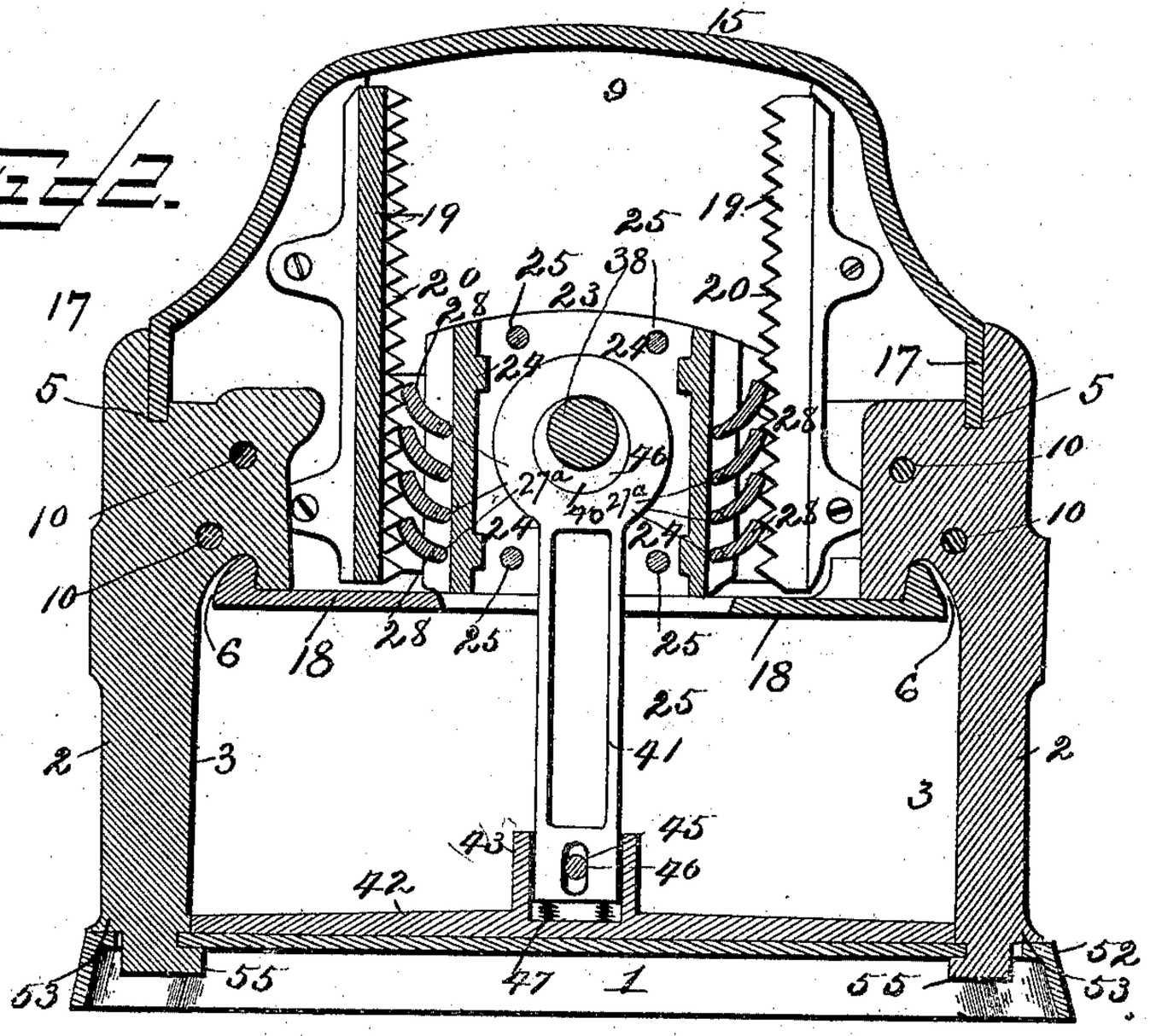

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Fig. 3.

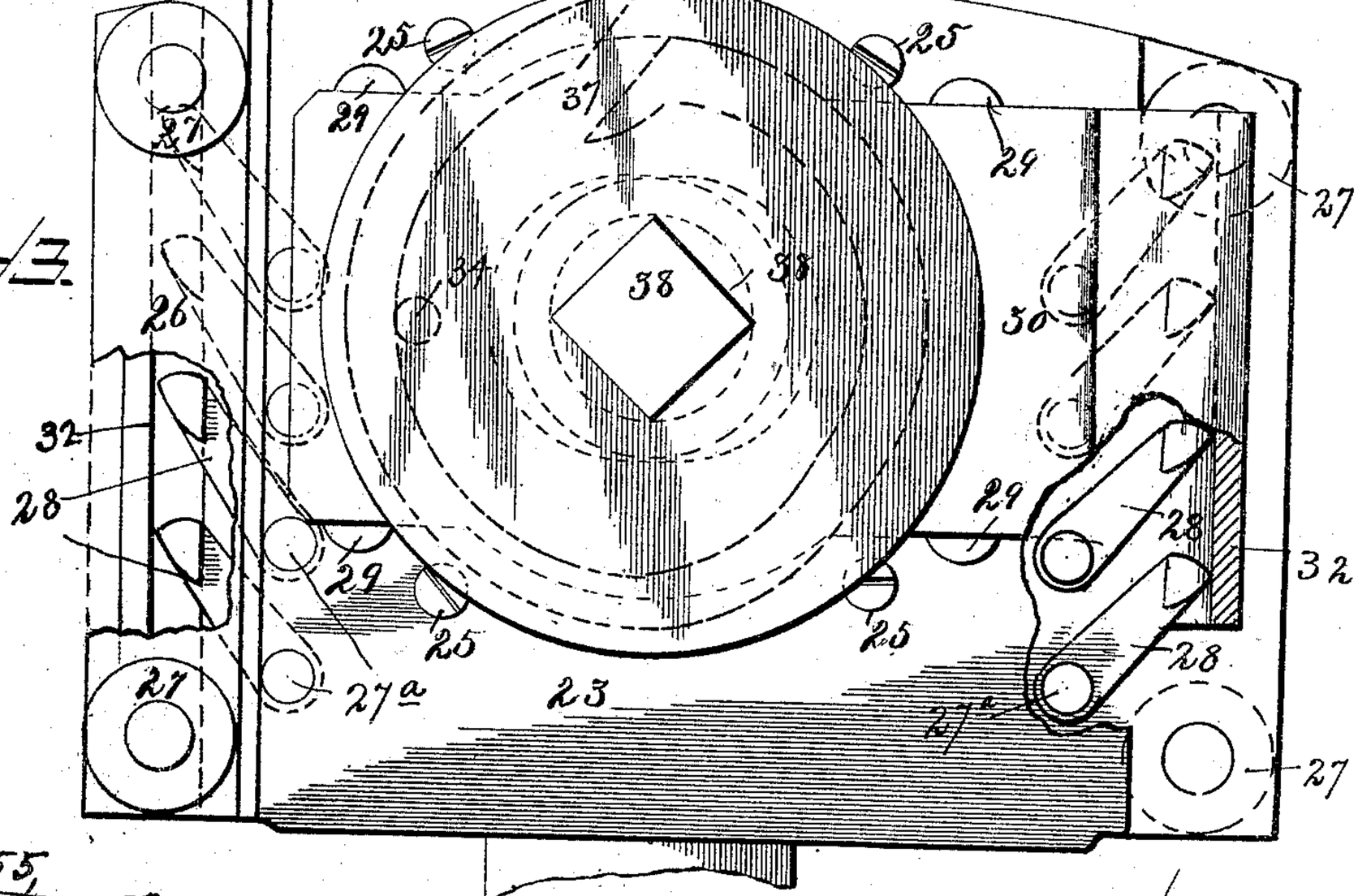


Fig. 10.

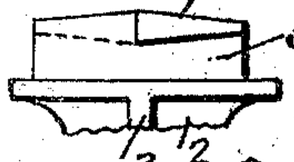


Fig. 11.

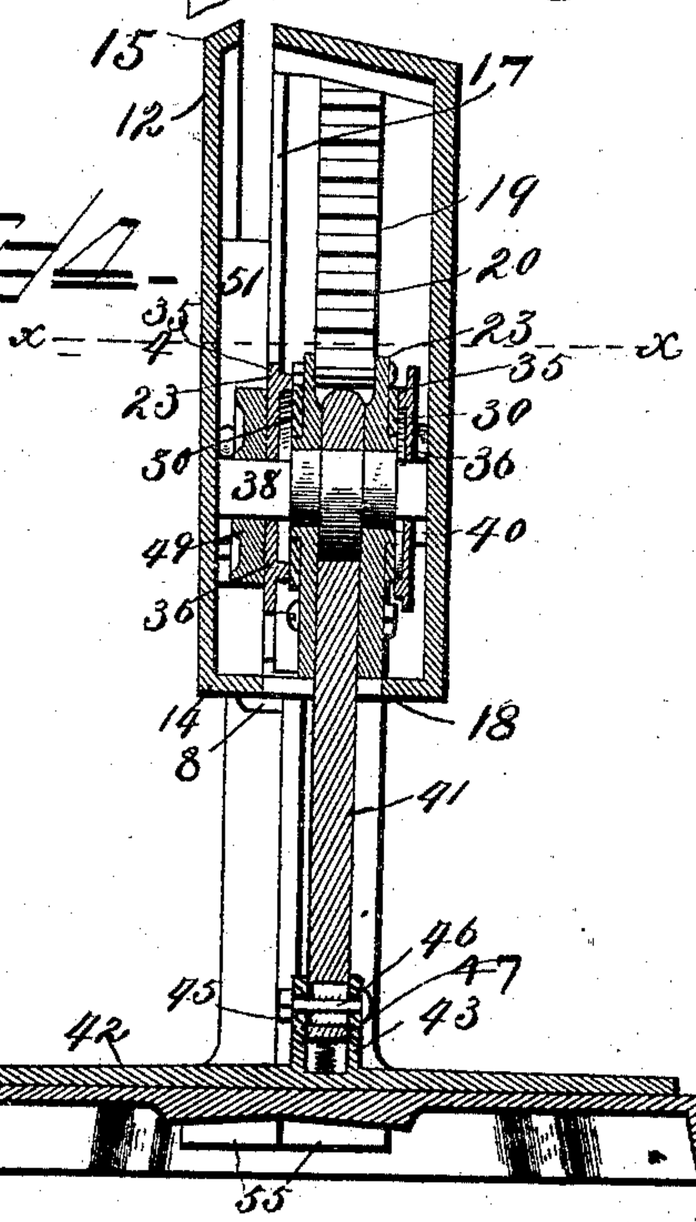


Fig. 12.

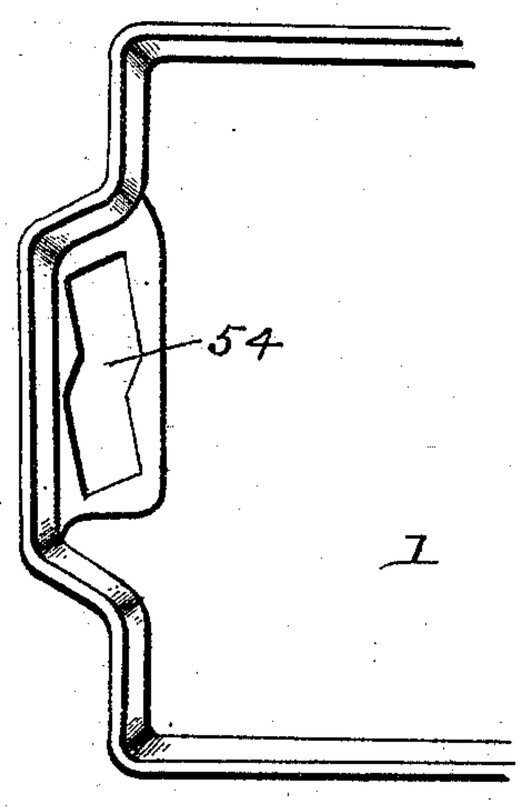
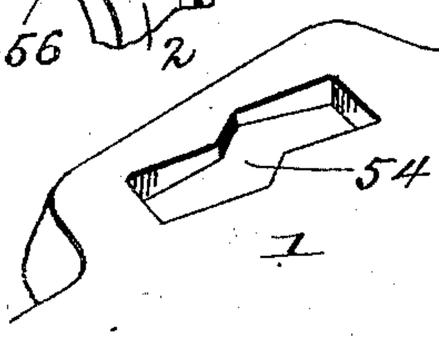


Fig. 9.



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(No Model.) 3 Sheets—Sheet 3.

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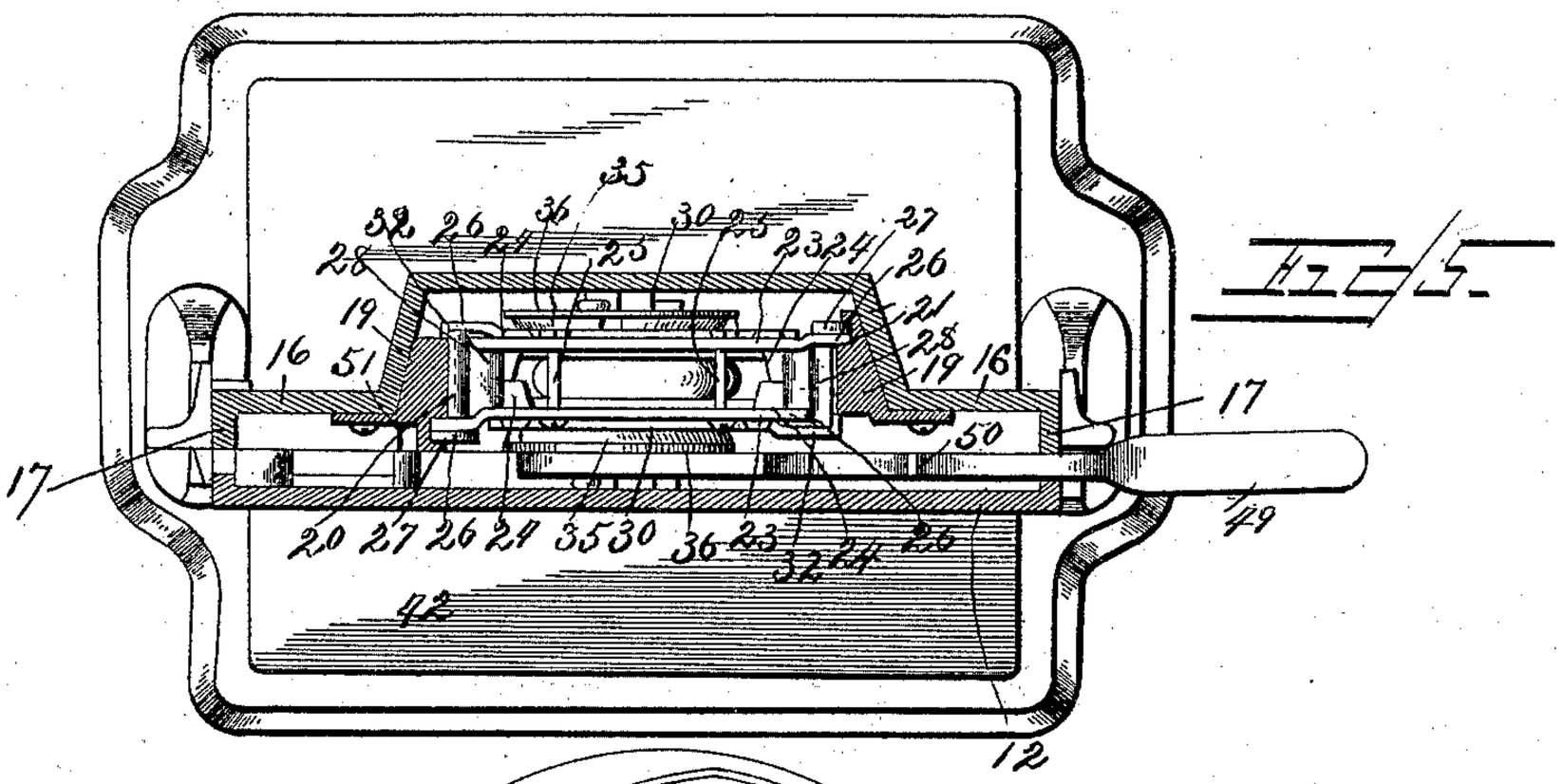


Fig. 5.

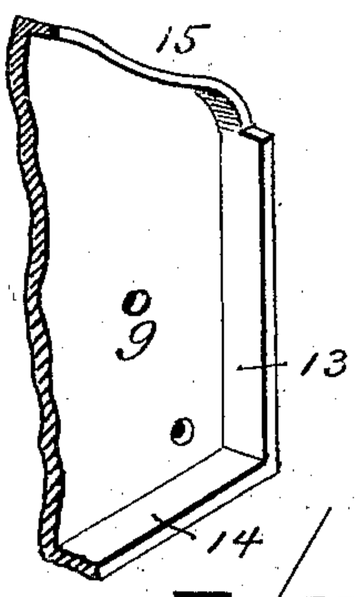


Fig. 11.

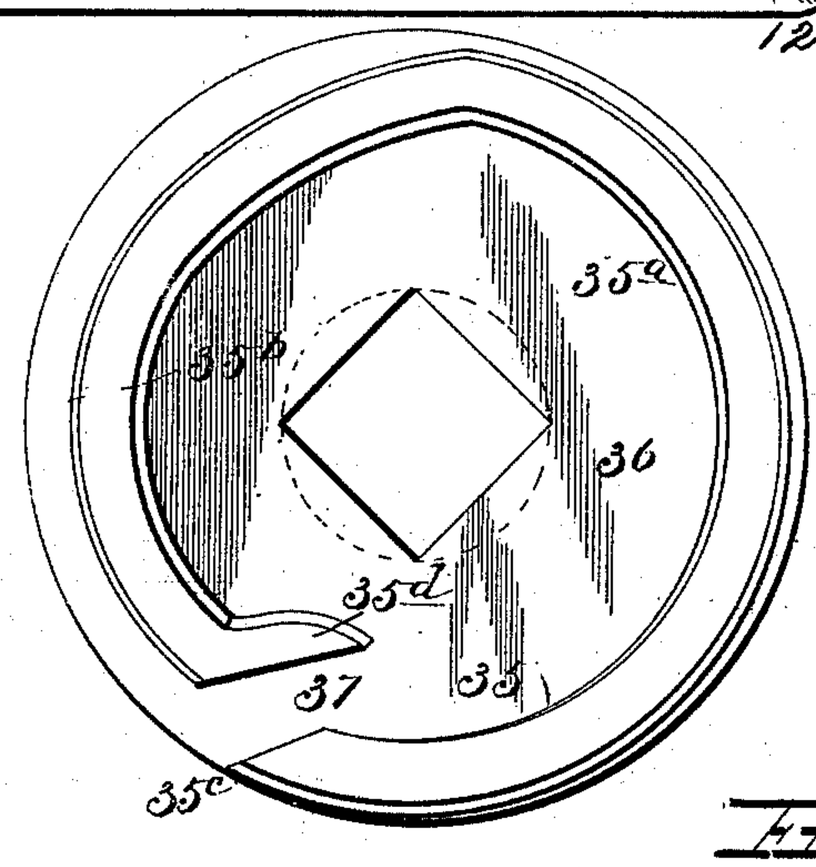


Fig. 6.

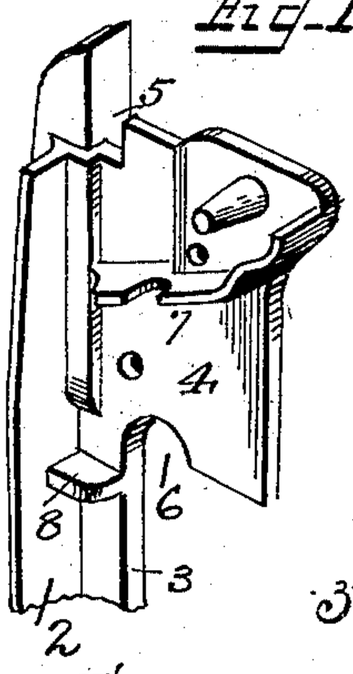
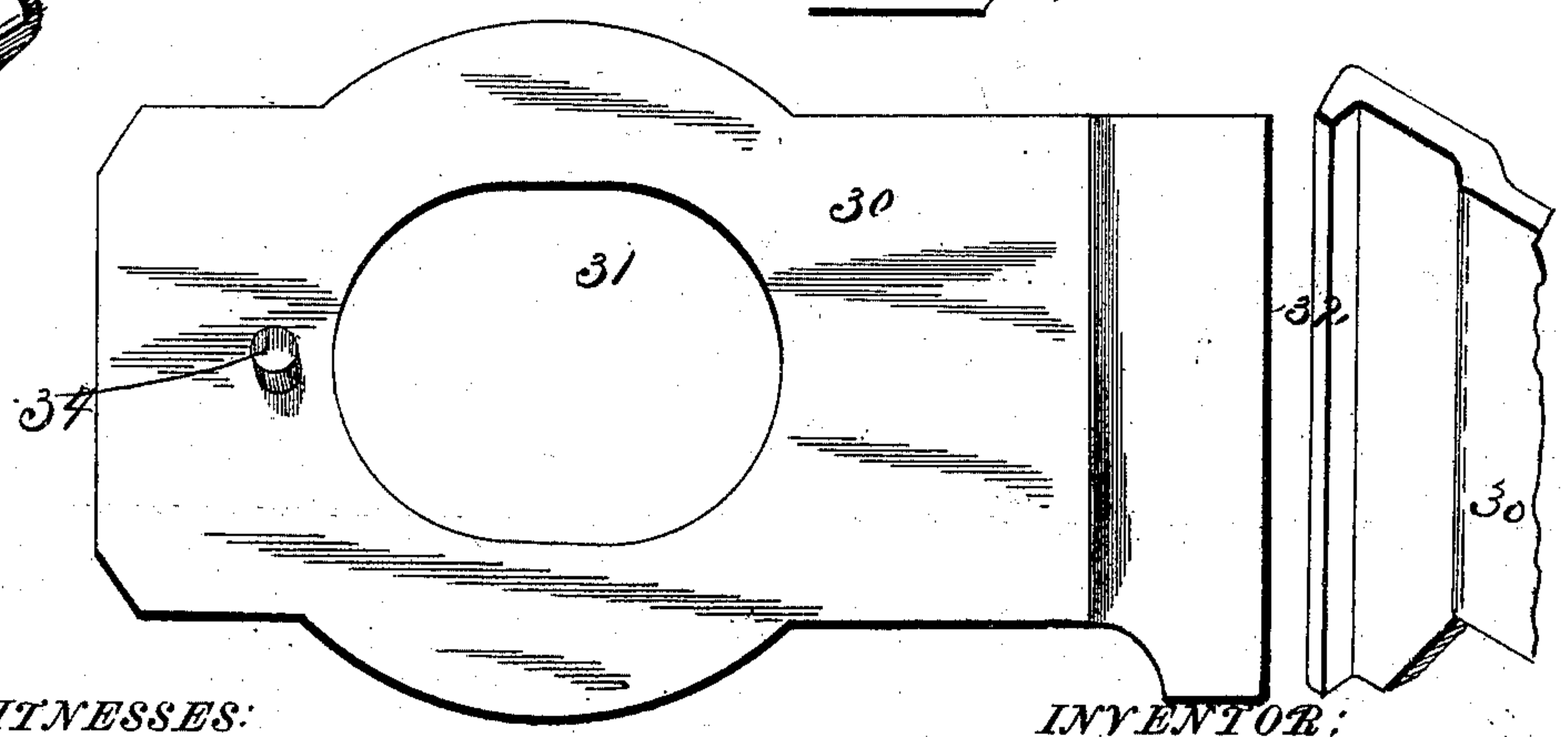


Fig. 12.

Fig. 7.



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UNITED STATES PATENT OFFICE.

GREVILLE E. CLARKE, OF RACINE, WISCONSIN.

LETTER-PRESS.

SPECIFICATION forming part of Letters Patent No. 505,093, dated September 19, 1893.

Application filed August 11, 1892. Serial No. 442,830. (No model.)

To all whom it may concern:

Be it known that I, GREVILLE E. CLARKE, a citizen of the United States, and a resident of Racine, in the county of Racine and State of Wisconsin, have invented certain new and useful Improvements in Letter-Presses; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to improvements in copying presses of that description known as cam and lever presses, in which the pressure is applied to the platen by means of a pivoted lever and a cam.

The object of the invention is to provide improved means whereby the platen may be quickly and readily moved vertically to admit of a copying book of any ordinary thickness being inserted between the bed and platen.

The invention consists in the novel construction and combination of parts hereinafter fully described and claimed.

In the accompanying drawings: Figure 1 is a front elevation of a copying press constructed in accordance with my invention, the front plate or cover, and the horizontally movable plate for throwing the dogs on the vertically movable head into and out of engagement with the rack teeth being removed, and the operating lever shown in dotted lines. Fig. 2 is a central vertical section of the press. Fig. 3 is a front view of the vertically adjustable head, the front plate being removed. Fig. 4 is a central transverse section of the press. Fig. 5 is a horizontal section on the line *x*—*x*, Fig. 4. Fig. 6 is an inner face view, on an enlarged scale, of the cam disk for operating the dogs on the left of the apparatus through the medium of the horizontally movable plate. Fig. 7 is a front view of the horizontally movable plate, for operating the dogs on the right. Figs. 8 and 9 are detail views of the boxes which receive the lower ends of the uprights. Fig. 10 shows detail views of the lower end of one of the uprights, inverted. Fig. 11 is a perspective view of a portion of the cover of the housing. Fig. 12 is a similar view of a portion of one of the uprights.

In the said drawings the reference numeral 1 designates the base or bed, consisting of a rectangular metal plate, provided with uprights or standards 2, at each end or side as usual in this class of presses. These standards are provided with vertical ribs 3, and near their upper ends with inwardly projecting lugs 4, provided with notches 5 and 6, and also with outwardly extending ribs 7 and studs 8. These lugs serve to support a housing 9, secured thereto by means of bolts 10, and provided with a cover 12. The lower edge of this cover rests on the studs 8, and the ribs 7 serve to prevent said cover from coming in contact with the working parts of the press when bolted to the housing. Said cover is formed with side and bottom flanges 13 and 14, and with a top flange 15, the latter, flange 15, being only about half the width of flanges 13 and 14, so as to leave a space for the operating lever. The housing is formed with wings 16, and side and bottom flanges 17 and 18. The notches 6 serve as guides for the lugs 6ª of the flanges 18, of the housing.

Located within the housing and bolted to the wings 16 thereof, are two vertical rack bars 19, formed with rack teeth 20, one of said bars being provided with a vertical groove 21 at its rear side, and the other with a similar groove at its front side or edge, these grooves forming guideways for the vertically movable head carrying a cam shaft and operating lever hereinafter described.

The vertically movable head consists of two rectangular metal plates 23 having ribs 24 on their inner faces which regulate the distance between said plates which are bolted together by means of bolts 25. Each of these plates at one end is provided with a vertical flange 26, provided with anti-friction wheels 27, which work in the guideways in the rack bars 19. These two plates 23 are identical in construction and when placed face to face and bolted together they form a head which carries the main working parts of the press. At each end these plates are provided with aligned holes to receive the journals 27ª, of the dogs 28, which engage with the rack teeth 20, and prevent movement

of said head. They are also formed with central apertures for the passage of the cam shaft and on their outer faces with aligned studs 29, which form guideways for the horizontally movable plate 30, for actuating said dogs and throwing them in and out of engagement with the rack teeth 20. These plates are formed with a central elongated aperture 31, through which the cam shaft passes, and at opposite ends are provided with inwardly extending vertical flanges 32, adapted to engage with said dogs as hereinafter explained. On their outer faces these plates are each formed or provided with a stud or pin 34, which engages with a cam flange 35 on a disk 36, mounted upon and rotating with the cam shaft. This cam flange is of peculiar construction being essentially comprised of two portions 35^a and 35^b but of different radii, with a passage way 37 for the stud or pin 34. The end of the flange 35^a is beveled as seen at 35^c, while the portion 35^b is formed with an inwardly extending beveled lug 35^d. The object of these cam disks is to move the plates 30 inwardly at the proper moment to throw the dogs out of engagement with the rack teeth 20, as will be hereinafter explained. The numeral 38, denotes the cam shaft having squared or angular ends 39, and an intermediate circular portion which is journaled in the plates forming the vertically adjustable head. This shaft is provided with a cam or eccentric 40, working in a circular aperture in the platen rod or bar 41 connected to the platen 42. This platen is provided or formed with an upwardly extending box 43, in which the lower end of said platen bar is stepped, said bar being provided with an elongated recess 45, through which passes a rod or bar 46, secured to said box. Intermediate the lower end of the platen bar and the bottom of said box are one or more coiled springs 47 for the purpose of affording a yielding bearing for the platen.

The numeral 49, denotes the operating lever having an angular aperture through which the correspondingly shaped end of the cam shaft passes, so that by actuating said lever said cam shaft will be rotated or oscillated. Upon one side the lever 49 is formed with a projection 50, which is adapted to engage with a weighted pivoted arm 51, which forms a fulcrum for said lever when the head carrying the operating parts is elevated.

The operation is as follows: When the platen is depressed to its fullest extent, the parts are in the positions shown in Fig. 1, the dogs being engaged with the rack teeth so as to prevent any upward movement of the head carrying the working parts, and the lever 49, being in the position, shown in said Fig. 1. The flanges on the cam disks and the pins 34, of the horizontally movable plates, occupy the relative positions shown by the dotted lines, Fig. 3. To elevate the platen, the lever 49, is raised or turned to the left to a perpendicular position, and by means of the eccentric 40, the platen is also raised. During this movement of the lever the cam disks are rotated one quarter of a revolution, the pins 34, sliding along the inner side of flange 35^a, until they reach the passageways 37, when they will strike the lugs 35^d, which cause the plates 30 to be moved inwardly and their flanges 32, to throw the dogs 28, out of engagement with the rack teeth 20. By now turning lever 49, still farther to the left, the projection 50, will strike the pivoted arm 51, as seen by the dotted lines, Fig. 1, and by bearing down upon said lever, the vertically movable head will be elevated, the said arm 51, serving as a fulcrum for said lever. During these movements the upper end of the arm 51, will slide along the lever and when the head has been elevated to its fullest extent the arm will strike against the projection 50^a and its movement will be limited by the upper end of rib 7, of the lug 4, at the left. While the cam disks are rotating as the said head is being raised the pins 34, will pass out of the passage ways 37, and ride along the outer sides of the flanges 35^b. By this means the platen can be elevated independently of any vertical movement of the head and it can also be raised with said head when a greater space is required between the platen and the bed. At each end the bed or base is formed with a zigzag hole or aperture 54, to receive the lower ends of the uprights 2. These uprights are formed with a flange 53, which rests on said bed and with a lug 56, which passes through the holes or apertures 54. At each end these lugs are formed with a beveled rib 55, on opposite sides, see Fig. 10. In practice the lugs are inserted into the recesses 54, with the ribs projecting just below the base. By now giving the uprights a slight turn to properly align them with the ends of the base or bed, the ribs 55, will engage under the edges of said apertures and securely hold the uprights in place.

Having thus described my invention, what I claim is—

1. In a copying press the combination with the bed, the uprights, the housing and the platen, of the vertically movable head having a series of pivoted dogs, the rack bars having rack teeth, the operating lever and cam, and means for throwing said dogs into and out of engagement with the rack teeth, substantially as described.

2. In a copying press the combination with the bed, the uprights, the housing, the platen and its rod or bar, of the rack bars provided with rack teeth, the vertically movable head provided with pivoted dogs, the cam shaft having a cam and formed with angular ends and an intermediate cylindrical portion, the operating lever, the horizontally movable plate provided with a vertical flange and a stud or pin, and the disk mounted on the cam shaft and provided with the cam flange having a passageway, substantially as described.

3. In a copying press the combination with

the bed, the uprights, the housing, the platen and its rod or bar, of the rack bars provided with rack teeth, and vertical grooves, the vertically movable head having vertical flanges and anti-friction rollers, and provided with pivoted dogs, the cam shaft having a cam and provided with angular ends and an intermediate cylindrical portion, the operating lever, the horizontally movable plates provided with vertical flanges and studs or pins, and the disks mounted upon the cam shaft provided with the cam flanges having passageways, substantially as described.

4. In a copying press the combination with the bed, the uprights, the housing, the platen and its rod or bar, the rack bars having rack teeth, the vertically movable head having a series of pivoted dogs, the cam shaft, the cam and the operating lever, of the horizontally movable plates having vertical flanges and studs or pins, the cam disks having cam flanges and passageways, and the inward and outward extensions of said flanges, substantially as and for the purpose specified.

5. In a copying press the combination with the bed, the uprights, the housing, the platen and its rod or bar, the rack bars having rack teeth, the vertically movable head provided with pivoted dogs, the cam, the cam shaft and the operating lever provided with a projection at one side, of the horizontally movable plates having vertical flanges, and studs or pins, the disks having cam flanges, and the pivoted weighted arm adapted to engage with and form a fulcrum for said operating lever, substantially as and for the purpose specified.

In testimony that I claim the foregoing as my own I have hereunto affixed my signature in presence of two witnesses.

GREVILLE E. CLARKE.

Witnesses:
ERASTUS C. PECK,
ALBERT L. ANDERSON.